

**A Study on Supply Chain Management at Future Retail Ltd.:
Analysis of Shrinkage & Inventory Control**

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Comments by the Faculty

Inventory control is an important aspect of any Supply chain management. In its complete value chain from vendor to customer there are various stages, which can impact inventory control in different ways. An effective Inventory control is characterized by, lowest inventory holding, zero loss of inventory along with zero backorders. In an ideal situation, it is Just-In-Time (JIT) inventory system which means zero holding, zero loss and zero backorders. However, in real life one, can aspire to reach JIT only in a phased manner and be in the vicinity of an ideal JIT system.

In this internship an attempt is made to understand and analyze loss of inventory or the shrinkage in a retail store Big Bazaar and identify the root causes for the shrinkage. Reduction in loss would mean reduced operating expenses creating more value for all the stakeholders.

In order to address this problem of shrinkage, problem - solving techniques from basic seven QC tools are applied, the problem analyzed and recommendations are made for implementation to help reduce inventory shrinkage.

Student has applied problem - solving tools like Pareto analysis (rule of 80:20), and root cause analysis to solve inventory shrinkage problems. These tools are universal and can be used for solving any business problem in a structured and systematic manner.

This internship is of an immense value to the student in terms of application of conceptual knowledge on supply chain as well as problem - solving techniques and tools.

In this internship student has learnt Supply Chain processes of retail operations and has got an insight into the managerial aspects of supply chain. This has further augmented the ability to apply problem - solving tools and techniques to improve supply chain operations. This internship has enhanced the knowledge and skills required to perform managerial role effectively, by comprehending and applying subject knowledge as well as problem - solving tools and techniques under the context. In general, these learnings act as a building block to become an effective operations manager.

Rajendra Todalbagi

A Study on Supply Chain Management at Future Retail Ltd., Analysis of Shrinkage & Inventory Control

Prologue

The SIP project carried out at Future Retail Ltd included shrinkage analysis and study of inventory control methods.

Introduction

Retail shrinkage is one of the major challenges faced by retail industry. In financial accounting, the term inventory shrinkage (sometimes truncated to shrink) is the loss of products between point of manufacture or purchase from supplier and point of sale. If the amount of shrink is large, then profits go down which results in increased costs to the consumer to meet the needs of the retailer. In this report, attempt has been made to identify the major factors that cause inventory shrinkage in the store and to find major SKUs that contribute to shrinkage. Pareto chart is considered appropriate for identifying the significant causes that contribute to the shrinkage followed by fish bone diagram for finding out root causes of the shrinkage and countermeasures. [<http://www.retail.com>]

Shrinkage = Inward of items – sale of items – DAD (damages & defects booked) – stock in floor

Shrinkage/Total Sales x 100 = Shrinkage Percent

At Big Bazaar, Mysore shrinkage percent is set to a limit as not to exceed 0.07% of sales value.

About Future Retail Ltd

Future Retail Ltd being the major player in the Indian retail sector has been efficiently managing its retail operation. As compared to other major retail players like Reliance and Aditya retail Future retail has maintained its COGS comparatively lower than other peers. Future retail has around COGS of 60% of its sales value whereas Reliance and Aditya retail has around COGS of 80% of its sales value. Future retail has an operating income of 8.93% of its sales value which is way above when compared to its peers. [<http://www.futureretail.co.in>] & [<http://www.futuregroup.in>]

Table 1 : Financial Analysis of Future Retail Ltd with Respect to its Competitors.

Company	Future Retail Ltd	Reliance Retail Ltd	Aditya Retail Ltd
Year	2014	2014	2014
Values in crores INR			
SALES	12292.64	12751.95	2510.61
Opening Inventory	2140.24	1959.23	107.73
Closing Inventory	3113.29	3263.82	209.02
Inventory purchased	8498.87	11503.02	2080.03
COGS	7525.82	10198.43	1978.74
Operating income	1098.15	652.28	-233.04
Operating income ratio	8.93%	5.12%	-9.28%

* Source: Capitaline [https://www.capitaline.com]

Problem Statement

To study the major factors that cause inventory shrinkage in the store and to find major SKUs that contribute to shrinkage.

Factors that Contribute to Shrinkage

A review was done with respect to key processes of retail operations viz: logistics, point of sales billing and customer service desk. Further, interviews were conducted with respective team leaders. Based on the above, following factors are summarized as root causes for retail shrinkage.

<p>External Factors:</p> <ul style="list-style-type: none"> • Packaging at manufacturer's location • Transportation • Pilferage • Handling at warehouse 	<p>Internal Factors:</p> <p>Logistics department:</p> <ul style="list-style-type: none"> • Receiving damaged products • Receiving expired products • Pilferage <p>POS terminal</p> <ul style="list-style-type: none"> • Missed SKUs while billing • Missed quantity • Scanning single item for a combo offer <p>Customer Service Desk (CSD)</p> <ul style="list-style-type: none"> • Gift wrapping of items not in bill.
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Methodology

Following approach was taken to do an in-depth study of the problem to identify root causes. Processes and departments that account for shrinkage are studied in detail which points to the operational difficulties that are involved in handling SKUs.

Approach

Pareto chart

The Pareto chart is one of the seven basic tools of quality control. It is considered appropriate for identifying the significant causes that contribute to the shrinkage. It provides a graphic depiction of the Pareto principle, which states that, for many events, roughly 80% of the effects come from the 20% of the causes.

Pareto Chart is used to analyze data about the frequency of problems or causes in a process, and to prioritize problems that have maximum impact on the retail shrinkage.

Pareto distribution diagram is a vertical bar graph in which values are plotted in decreasing order of relative frequency from left to right. Pareto charts are extremely useful for analyzing which problems need attention first, because the taller bars on the chart, which represent frequency, clearly illustrate which variables have the greatest cumulative effect on a given system.

The independent variables on the chart are shown on the horizontal axis and the dependent variables are portrayed as the heights of bars. A point-to-point graph, which shows the cumulative relative frequency, may be superimposed on the bar graph. Since the values of the statistical variables are placed in order of relative frequency, the graph clearly reveals which factors have the greatest impact and where attention is likely to yield the greatest benefit. [Lee.N.et.al,2008]

This approach is considered to narrow down on major factors that cause shrinkage. Out of 45,000 odd SKUs in the store this approach seems to be suitable. In order to narrow down the factors that cause shrinkage Mercantile Code categories are used to group items. Value of items in INR is considered as appropriate unit of measurement in case of shrinkage. Category, departments and item descriptions are independent variables that are plotted along horizontal axis and values in INR of each independent variable are plotted along vertical axis.

Pareto chart is plotted considering three months of sales and inventory data from Jan, 2015 to Apr, 2015 comprising of mercantile code, article code, description, and category code etc..

Following aspects are covered while approaching this method:

- Understand operations of the retail store.
- Understand key departments and processes to identify root cause of shrinkage
- Participated in physical stock take process to understand the process of estimating shrinkage.

Analysis of the shrinkage data

Category wise shrinkage data was obtained and shrinkage value in INR is plotted against various categories to identify the category that has maximum impact on shrinkage. Pareto chart shows that general mercantile and food bazaar category are causing 76% of the total shrinkage.

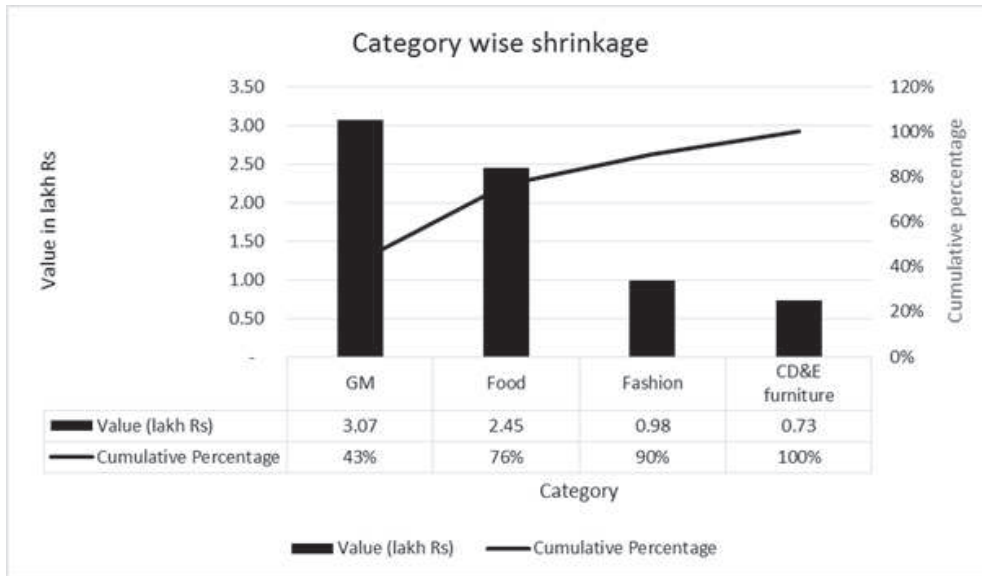


Figure 1: Pareto chart of category wise shrinkage data (Basis: survey data)

Shrinkage data for General Mercantile was obtained and shrinkage value in INR is plotted against various departments to identify the departments that have maximum impact on shrinkage. Pareto chart shows that Household and Luggage department are causing 88% of the total General Mercantile shrinkage.

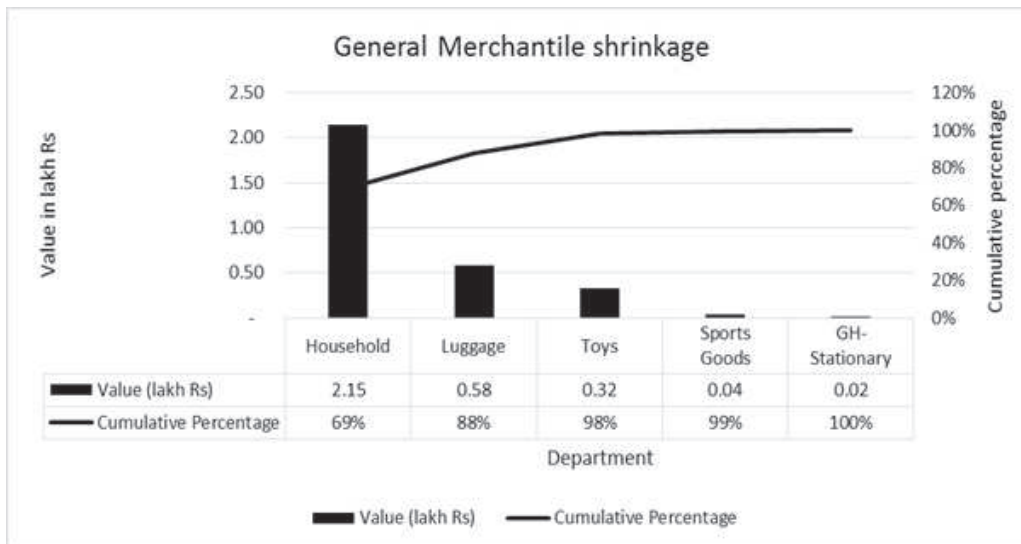


Figure 2: Pareto chart of General Mercantile category shrinkage data (Basis: survey data)

Shrinkage data for Household department was obtained and shrinkage value in INR is plotted against various items to identify the items that have maximum impact on shrinkage. Pareto chart shows that Cooktop and Crockery items are causing 77% of the total Household department shrinkage.

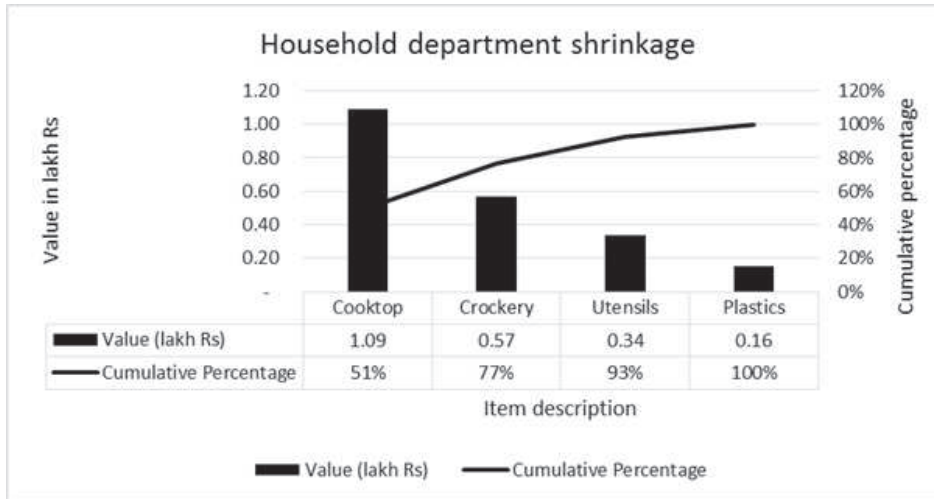


Figure 3: Pareto chart of Household Department Shrinkage Data (Basis : survey data)

Shrinkage data for Food bazaar category was obtained and shrinkage value in INR is plotted against various departments to identify the department that has maximum impact on shrinkage. Pareto chart shows that Farm Fresh, Home & personal care and Staples department are causing around 88% of the total Food bazaar shrinkage.

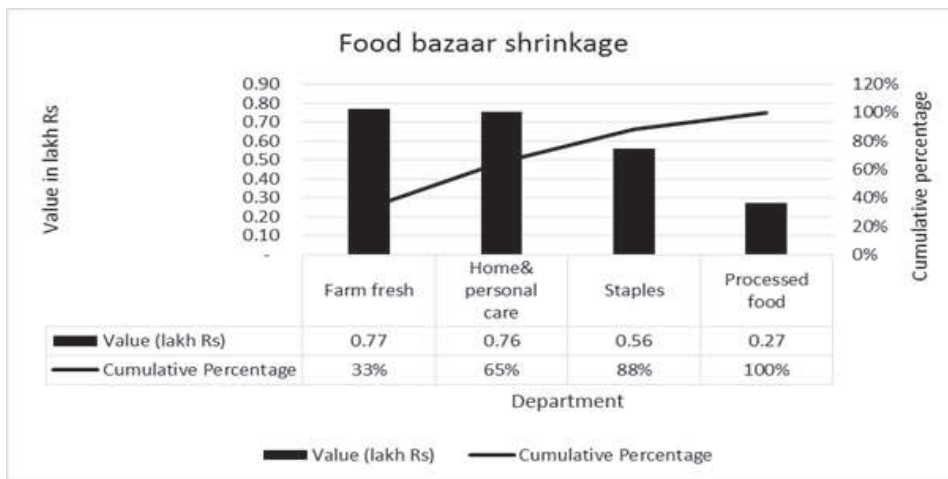


Figure 4: Pareto chart of Food bazaar category shrinkage data (Basis: survey data)

Shrinkage data for Farm Fresh department was obtained and shrinkage value in INR is plotted against various items to identify the department that has maximum impact on shrinkage. Pareto chart shows that Mango baigampalli and banana robusta are the major articles that contributed 79% of the total Farmfresh shrinkage.

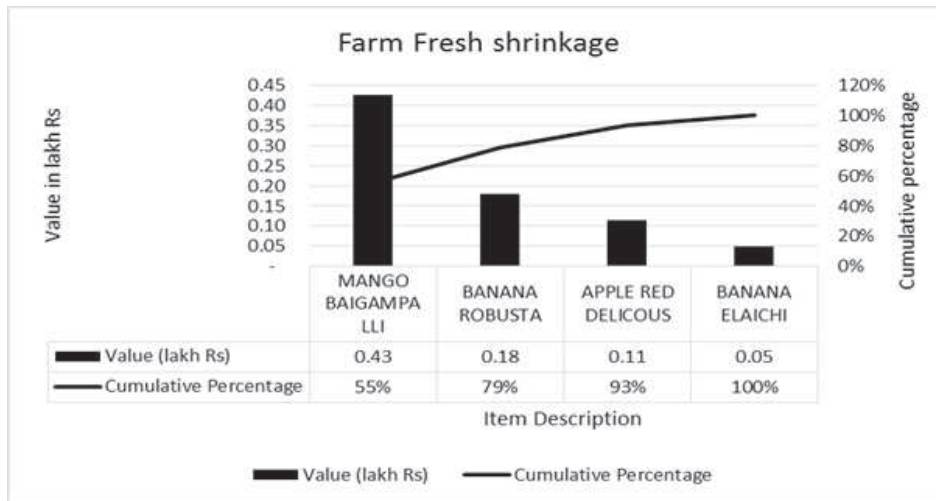


Figure 5: Pareto chart of Farm Fresh department shrinkage data (Basis: survey data)

Further a Root Cause Analysis (RCA) is done using fish bone diagram for retail shrinkage. The same is depicted below in figure 6.

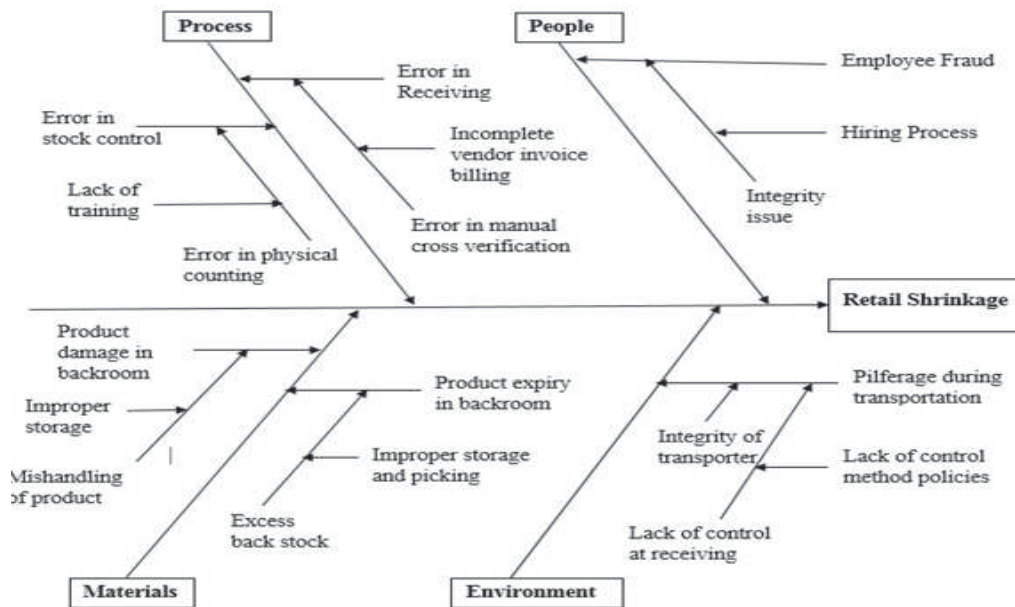


Figure 6: Fish bone or Ishikawa diagram for retail shrinkage

Recommendations

Sl. No.	Problem Areas	Root causes	Corrective Actions
1	Error in Receiving	Incomplete vendor invoice billing	Suggest vendors to prepare the detailed invoice which includes object ID: article number, PO reference number and also separate invoice for each PO. This will save time in cross checking the items and also reduce inwarding of unintended materials.
2	Error in stock control	Lack of training program	Developing appropriate process training programs to employees in terms of stock control and physical inventory verification will bring down errors in stock control process
3	Employee Fraud	Hiring process	Beef up hiring process to filter out people who lack integrity by appropriate background checks and hiring candidates with right attitude, appropriate counselling will improve their morale, thereby reducing instances of fraud
4	Product damage in backroom	Improper storage	Formulating and documenting standard operating procedures for appropriate storage and handling the materials along with display of visual controls will keep product damage in check.
5	Product expiry in backroom	Improper storage and picking	Constant monitoring of the excess stock in backroom and following FIFO method to ensure right picking of products that move to the floor help in reducing loss due to expiry of products in backroom. Placing visual controls will emphasize the need for proper storage and picking of products.
6	Pilferage during transportation	Lack of control at receiving	Formulating guidelines to receive bulk quantities and visual controls will address the issue of pilferage at the receiving gate itself. Quantities can be verified by checks and balances e.g.: weighing the items in bulk instead of physically counting each item in the box.

Conclusion

In the supply chain operations of the store there are some concern areas which need to be addressed for the efficient functioning. Causes that have major impact on the retail shrinkage have been identified and appropriate causes are analysed and drilled down to find the root cause. Based on the root cause analysis, subsequent corrective measures are suggested for the improvement in the current process.

References

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